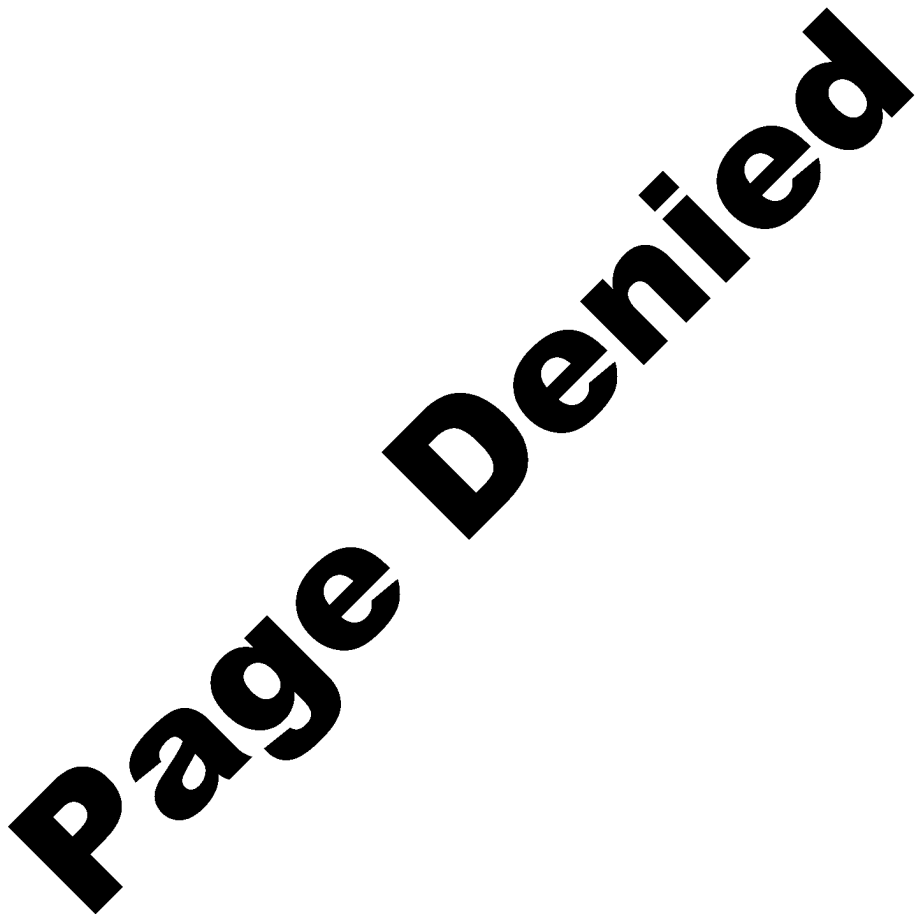

In replying please address:

[redacted]

25X1

April 28, 1959

Dear Sir:

In accord with recent discussions with your technical representative, we are herewith submitting a proposed program of research on additional phases of the effort under Task Order No. Z, directed toward the further development of an experimental air-film-cooled incinerator for the destruction of papers and documents, and of an experimental feeding mechanism for application in this type of incinerator.

The experimental air-film-cooled incinerator which has been under development on Task Order No. Z has reached the stage where the major requirements of your technical representatives have generally been satisfied. The design of this unit incorporates a quick-opening loading door, to facilitate batch feeding. It is currently expected that in the near future this experimental unit will be submitted to your technical representatives for further evaluation and demonstration.

Also, thus far under Task Order No. Z, a design has been evolved for an experimental paper-feeding mechanism. This unit appears to be capable of permitting unskilled personnel to feed papers and documents into an incinerator, of the general type under

consideration, conveniently and without personal discomfort, and also without disturbing the over-all combustion process significantly.

During a recent visit of your technical representative, demonstrations were presented of the performance of the experimental air-film-cooled incinerator at the stage of development as of that time, and of a mocked-up version of a feeding mechanism designed to illustrate some of the principles considered to be applicable to the device of interest. As a result of these demonstrations and of subsequent discussions, your technical representative suggested that consideration be given to the further development of the experimental air-film-cooled incinerator and to the additional evaluation of the experimental feeding mechanism. A proposed program of research directed toward achieving the above-indicated aims is described in the following.

Objectives

The proposed program of research would be directed toward an investigation of selected modifications of the experimental air-film-cooled-incinerator design; the preparation and evaluation of an additional experimental air-film-cooled incinerator which would incorporate any of the modifications which were mutually considered to be favorable on the basis of the investigation proposed herein and the research being performed currently under Task Order No. 5; and an evaluation of the current version of the experimental paper-feeding mechanism in connection with the experimental air-film-cooled incinerator.

General Method of Procedure

The Experimental Incinerator

Particular attention would be given to the grid used to prevent relatively large pieces of incompletely burned paper from leaving the combustion chamber. The design configuration and the material of construction would be investigated further in an attempt to minimize the accumulation of incompletely burned paper on the grid and subsequent burning there. This research would be directed toward reducing the possibility of carburization and resulting premature failure of the grid. The importance of obtaining a grid which would provide a reasonable life under anticipated service conditions is recognized; every effort would be directed toward achieving this goal.

Currently, a few experiments are being conducted to evaluate the potential advantages of preparing the grid using Nichrome 5 wire cloth in place of the Type 304 stainless steel material employed previously. Further evaluation of this grid material is contemplated under the proposed program. Also, the use of a supplementary metal grating would be explored. If such a component appeared to be useful, then a grating in the form of bars or perhaps radial spokes prepared from silicon carbide or its equivalent would be suspended in the annular space between the bottom of the grid and the liner, and its effect would be evaluated.

Concurrent with the study of improved grid configuration and material of construction, consideration would be given to other aspects

of the design of the experimental air-film-cooled incinerator. Wherever practicable, attempts would be made to simplify the design of the experimental unit. To the extent mutually considered necessary, modifications stemming from some of the research being performed at present would be investigated further; this research is currently being directed toward increasing the rate of burning during incineration of the last few pounds of paper, and also eliminating any unburned residue.

Any of the above-indicated modifications which were mutually considered favorable would be incorporated in the design of the experimental air-film-cooled unit. Also, a sighting port would be included next to the loading door, to permit the operator to view the burning operation during the last stages. An additional experimental unit would then be prepared on the basis of the modified design.

A limited number of burning experiments would be conducted in this modified experimental unit. Generally, obsolete telephone books and similar material would be used as the charge. To check performance, the experimental unit would be run under manual single-batch conditions, as well as under manual intermittent-batch conditions. Also, it is contemplated that, in one or perhaps two burning experiments, newspapers would be employed as the charge so as to promote increased burning rates and thus permit the further evaluation of the above-described supplementary refractory grating. Within the limits of the time and funds provided, any additional modifications which appeared to be favorable would be incorporated in the design of the modified experimental incinerator.

It should be noted that only a limited amount of effort has been proposed herein in connection with the development of a satisfactory grid; it is hoped that this problem will be resolved within the limits of the time and funds provided. Also, the proposed program does not include research directed toward investigating suggested modifications which might stem from your technical representatives' further evaluation and demonstration of the original experimental air-film-cooled incinerator. Every effort would be made, within the limits of the time and funds provided, to give consideration to such suggested changes, for subsequent incorporation in the design of the modified experimental unit. However, it is possible that additional effort would be required in the investigation of a grid which would satisfy your technical representatives' requirements in regard to performance and service life; and in the study of suggested modifications for the experimental incinerator that might arise as a result of demonstrations of the unit. If so, this additional effort would have to be provided for under another contractual arrangement.

The Experimental Feeding Mechanism

It is contemplated that, within the limits of the current contract, it will be possible to incorporate the previously demonstrated principles into an experimental device; to install it on the experimental refractory-lined incinerator; and to evaluate its performance. If, as expected, the results are favorable, then it is

proposed, under the program described here, that the performance of such a unit be evaluated in connection with the above-described modified experimental air-film-cooled incinerator. Of primary concern are the distribution of the paper charge within the burning chamber, and the effects of the intermittent introduction of batches of paper during the burning process on the rate of burning and on the amount of fly ash produced. It is anticipated that the version of the experimental feeding mechanism resulting from the current efforts will be relatively awkward in appearance and will not incorporate some of the features, such as hinging, which have been discussed with your technical representatives and which are considered to be necessary in a finalized design. Nevertheless, it is believed that the primary principles of operation can be evaluated and demonstrated if the experimental feeding mechanism is temporarily attached to the experimental air-film-cooled incinerator.

Accordingly, under the program of research described here, it is planned that the experimental feeding mechanism would be adapted appropriately and then installed temporarily on the above-described modified experimental incinerator. A primary problem in this temporary adaptation would be the provision of an adequate seal between the liner of the experimental incinerator and the walls of the experimental loading mechanism. The expansion of the liner during the burning operation causes the opening in the liner to move toward the outer wall of the experimental incinerator and up. The walls of the experimental feeding mechanism would be generally stationary because the unit would be attached to the outer wall. Thus, a seal must be

provided between the above-described stationary and moving members to prevent the introduction of excessive air into the experimental incinerator at that location. A satisfactory sealing principle has been applied to the loading door of the current experimental air-film-cooled incinerator, but an additional seal must be provided for the experimental feeding mechanism.

Further, in connection with the adaptation, the opening in the outer wall of the experimental incinerator would have to be changed to fit the experimental feeding mechanism. Also, air ducts would have to be provided to the experimental feeding mechanism from the air supply at the base of the experimental incinerator.

After the experimental feeding mechanism was temporarily attached, feeding and burning experiments would be conducted to evaluate the performance of the experimental mechanism and the effect of the feeding operation on the burning process. Of particular interest would be the ability of the experimental feeding mechanism, during operation, to remain free from smoke and fly ash, and thus to maintain the environs free from these undesirable elements; and to permit the experimental incinerator to provide high burning rates without adverse effects on the equipment or the characteristics of the stack effluents.

If, as expected, the results of the above-described activity are favorable, then at the conclusion of the proposed research period, the desirability of preparing a prototype model of the feeding mechanism would be discussed with your technical representative.

Reports and Liaison

Your technical representatives would be kept informed of the progress of the proposed research program by informal monthly letter reports. These would be supplemented by discussions via telephone and during your technical representatives' periodic visits. At the conclusion of the proposed research period, a summary report would be submitted that described the effort performed.

Duration and Estimated Costs

It is proposed, that the contract provide for an additional four-month period of research, with an increase in the estimated appropriation of $11,766, which includes an increase in the fixed fee of $666. A general breakdown of the estimated appropriation increase is attached.

The Contract

The proposed contract would be a period-basis research agreement, consistent with our current contractual arrangements and providing only for a fixed period of research leading toward the objectives outlined above.

If you should have any questions regarding our proposal, please let us know. Any inquiries of a contractual nature may be directed to [redacted] 25X1

Very truly yours,

[redacted] 25X1

Vice President

EES:mlm

In Duplicate

[redacted] the U. S. Government. 25X1

For Research on xxxxxxxx additional research on "The Development of a Specialized Paper-Burning Incinerator".

Based upon a period-basis Contract for a research period of four months.

(Including time for submission of all reports. The proposed contract will not provide for earlier conclusion of the research.)

ESTIMATED COSTS

We expect that the cost of this research for the period indicated above may be distributed approximately as set forth hereon, subject to the understanding that this allocation is merely an estimate, and actual costs incurred may vary from the categories shown. We have determined that these estimates are reasonable and consistent with [redacted] established policies in its research for the various Government agencies, which policies are briefly discussed below and will be followed in determination of our actual costs hereunder. 25X1

Materials & Supplies, etc. $ 1,150

(Including any equipment which may be purchased as necessary in performance of the research. Charges of $25 or less are excluded from this item.)

Use of Equipment and Technical Services, Travel, and Misc. $ 1,500

(Including applicable costs of technical research and service divisions, and use of technical equipment, except that any undistributed balances of these accounts will be included in overhead. Cost of travel includes reasonable actual subsistence expenses and the actual cost of transportation. An allowance of up to 8¢ per mile for all necessary travel by privately owned conveyance is included in lieu of the cost of such travel.)

Salaries & Wages

(Including our predetermined accrual for vacation, holiday, and sick-leave pay, pensions, and social security.)

Type of Employee	*No. of Man-Months*	*Estimated Cost*
Supervision	2/3	$ 690
Research Engineers	3	2,220
Lab. Assistants	4-1/2	1,890
Steno., Clerical, Shop & Photo., etc.	1-1/3	480
Total Salaries & Wages		$ 5,280

Overhead

60 per cent of salaries and wages, as they are defined above. Provisional monthly reimbursement will be at the rate of 60 per cent of salaries and wages, as so defined, or at such other provisional rate as may from time to time be mutually agreed upon with the Government's audit representatives. This is a provisional rate for current reimbursement, which we have arrived at by negotiation with Government representatives, and it will be subject to retroactive revision to the "actual" rate agreed upon with them for each calendar year following a detailed audit for that year. The item of overhead includes general research, charges of $25 or less for materials and supplies, and other categories of costs we customarily include in our overhead account. Cash discounts on all purchases will be credited to overhead, instead of to the amount of the purchase. Scrap of appreciable value will be credited directly to the project. All other scrap will be credited to the overhead account, in which the Government participates.) $ 3,170

Total Estimated Cost	$11,100
Fixed Fee	$ 666
Contract Price	$11,766

*Please let us have your acceptance in our hands by June 30, 1958

Unless we extend the time, your acceptance after that date will be subject to agreement.

[redacted] 25X1

10/57